INDIAN SUSTAINABLE ENERGY NEWS

Volume 2, Number 1
Winter Solstice 2000

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Indian Sustainable Energy News is a publication of the Native American Renewable Energy Education Project

TRIBAL PERSPECTIVE

Harnessing the Wind

There is tremendous potential for wind power development on tribal lands. The following is a review of current tribal wind projects, both large and small, all providing for tribal energy needs and supporting economic self-sufficiency.

Blackfeet

After seven years of work, including wind studies, Council meetings, pilot project, and finance and sales negotiations, the Blackfeet Tribe of north central Montana is close to seeing the construction of a 22 megawatt (MW) wind farm on their lands. When on line, the project will provide enough energy to electrify 6,000 homes. This electricity will be made available to Bonneville Power Administration, various Montana Electric Cooperatives, and to Montana Power Company distribution customers. "This wind energy project will allow the Blackfeet Tribe to take advantage of one of our most plentiful natural resources on our Reservation. We are gratified that this idea has finally become a reality," said Earl Old Person, chairman of the Blackfeet tribal business council.

The Tribe has contracted with SeaWest WindPower to install the project, and construction is set to begin in May 2001 with commercial operation scheduled for October 2001. SeaWest will work closely with Siyeh Development Corporation, the Blackfeet for-profit corporation, to coordinate the project with tribal contractors, agencies, and communities. "This is a great opportunity to showcase our local workforce, and train tribal members for long-term technical jobs," said Dennis Fitzpatrick, Siyeh general manager.

USDOE

100 kW Vestas turbine spinning on the Blackfeet Reservation, Browning, Montana

The Blackfeet embarked on the road to wind farming with a 100 kilowatt (kW) Vestas V-17 turbine, installed in 1995 in the town of Browning and funded by the US Department of Energy (DOE), Indian Energy Resources Program. This turbine helped power the tribal college while enabling tribal members to become familiar with wind power. It also provided

Continued

USDOE

This 100 kW Micon turbine helps power the Spirit Lake Sioux Casino in North Dakota.

helpful data as well as educational and training opportunities.

This learning period has paid off; soon the wind barreling through the Blackfeet Reservation will be spinning an array of turbines, sending power to customers, and providing a healthy return on investment to the Blackfeet tribe. "The Blackfeet have a tremendous wind and land resource," says Jan C. Paulin, SeaWest president. "This project will tap that resource to create highly skilled employment opportunities on the Blackfeet Reservation and a true, commercially viable export industry." You can contact Dennis Fitzpatrick at Siyeh Development Corporation at 406-338-5669.

Fort Peck

Stoney Anketell, of the Fort Peck Assinboine and Sioux Tribes, is another long-time advocate of wind power. Even though demand for new electricity sources is low in Montana, Anketell just couldn't ignore the over 19-mph average wind speeds on his reservation.

Fort Peck would like to develop a 200 MW wind farm to capitalize on its northeast Montana wind. After studying five sites, two were found to be ideal locations, both of them at high elevations.

Currently the tribe is in negotiation with two large wind turbine companies, and has identified 49 MW of transmission capacity through the Western Area Power Authority (WAPA) lines.

Neither the Ft. Peck nor the Blackfeet Tribes are strangers to power development. Both tribes have oil and gas fields and have a history of negotiating sales agreements, joint partnerships, and financing. This experience is serving them well as they take charge of their wind energy resources.

Stoney Anketell can be contacted at 406-768-5112.

Fort Berthold

The Three Affiliated Tribes of Fort Berthold are using funds from a 1999 DOE grant to assess wind potential on their reservation. Jim Heckman, tribal environmental manager, reports that the tribe has a wind monitoring tower up, and is also looking at the possibility of selling power to federal facilities (IHS and BIA) located on the reservation.

The question is not whether they will put up a utility-scale wind turbine, but how large it will be. The tribal council has agreed to install the turbine, which, at 100 kW, would provide one quarter of casino and visitors lodge needs. If contracts can be negotiated between the tribe and federal agencies located on the reservation, then the number or size of turbines would be increased to help meet water supply, office, and clinic needs.

Heckman reports that the Tribal Council has, in general, been very supportive of the wind project. Siting was an issue since the best wind site is on scenic bluffs, 400 feet above the Missouri River. However, the prospect of taking charge of energy needs and improving the tribe's economic base has outweighed the aesthetic consideration.

Jim Heckman can be reached at 701-627-4569.

Rosebud and Lower Brule

The Rosebud Sioux Tribe in South Dakota is working out the arrangements to erect a 750 kW utility grade NEG Micon wind at the Rosebud Casino and Convention Center. Fifty percent ($508,000) of this project is funded through the DOE as a demonstration of a large scale, grid connected turbine. Average wind speeds at the site have been measured at over 17 mph.

This single turbine is anticipated to produce in excess of two million kWh annually. "Power from this project can serve the Tribe's commercial load center and it is paving the way for interconnection agreements between the Tribe and the regional generation and transmission organization," says Ronald L. Neiss, vice chairman of the Tribal Utility Commission (RSTUC).

The Rosebud project is designed to be tribally financed, owned, and operated from the start, as the Tribe anticipates larger tribally-owned wind farms in the near future.

The Lower Brule Sioux Tribe will soon be erecting meteorological towers for a wind power assessment for the reservation. Lower Brule is located near Big Bend Dam, a power hub of the WAPA transmission system. Pat Spears, representing the Tribe as President of Council On Utility Policy (COUP), says "Lower Brule and the other tribes in the Northern Plains have a tremendous wind energy resource that can produce over 100 times the 2000 megawatts produced annually by Missouri River reservoir hydropower. The development of wind energy can redress past and continuing environmental and cultural impacts on the River Tribes while contributing to economic restoration by marketing wind power to federal markets."

For more information, contact Pat Spears at 605-945-1908 or email him at pnspears2@aol.com.

Spirit Lake

It seems that casinos and wind turbines go hand-in-hand; the Spirit Lake Sioux of Fort Totten, North Dakota, used DOE funding to install a 100 kW Micon 108 turbine near their casino in 1996. The turbine cost $72,000 installed, plus $15,000 for the cable to the casino. According to Mark Longie, the tribal planner responsible for the project, this wind power saves at least $1,000 to $2,000 per month. Maintenance cost is

USDOE

The Turtle Mountain Chippewa use this 100 kW Micon turbine to help power the Tribe's water treatment plant.

low. A group of casino maintenance employees were trained by the original system installers, and these workers keep the turbine in shape with a regular maintenance schedule.

The tribe spent three years performing wind studies, with the assistance of a wind energy consultant. Seven towers were erected, with a total of 21 anemometers. Longie has clear memories of slogging out in waist-high snow to retrieve anemometer data from these towers! It was worth it. The wind study revealed that the tribe has excellent wind power potential.

Longie's parting words were, "Don't give up. It took a lot of work to collect the data, but we needed that study to get funds for the turbine." The data will also come in very handy when the tribe begins commercial power development. With good sites already identified, tribal planners will be able to make decisions and negotiate agreements much more quickly.

Mark Longie can be contacted at 701-766-1704 or email him at edfplan@stellarnet.com.

Turtle Mountain Chippewa

The Turtle Mountain Band of Chippewa Tribe, in Belcourt, North Dakota, used a DOE grant to launch their entry into wind power. Their first turbine, a 100 kW Micon 108 helps to power their water treatment plant. Jay Gourneau, tribal windsmith, estimates that the plant saves 5,000-15,000 kWh/month, depending on the wind. This translates to $500 to $1,000 in savings per month. The tribe has plans to put another turbine up to help power the new casino and resort.

Gourneau reports that, despite extreme weather, the turbine has been trouble free, requiring only annual maintenance. "It will probably be another five years before the gears, anemometer, and wind vane will need replacing, all minor costs." Asked for words of advice from a tribal windsmith, Jay replied, "With these new turbines, wind is a very good thing to get into."

Jay Gourneau can be reached at 701-477-0470 ext. 56, or email him at jaygourneau@hotmail.com.

Manzanita

The Manzanita Band of Kumeyaay Indians Reservation is located east of San Diego in California. The tribe are planning to take advantage of both solar and wind resources by installing a hybrid grid-intertied power system for tribal offices and the activity center. The hybrid system consists of a 1.2 kW photovoltaic array and a 7.5 kW wind turbine.

It will serve as a demonstration and training site for tribes with similar needs for small village-scale power, whether off-grid, or utility intertied. The system will be monitored for a three-year period and detailed performance records will be maintained. Tribal members will receive ongoing training during the three-year monitoring period to increase their technical knowledge related to the wind and solar energy industries. Children of neighboring Kumeyaay Tribes will be invited to visit the site to learn about renewable energy.

For more information about the Manzanita project, contact Barbara Ward at 619-766-4852.

Kotzebue

The Kotzebue Electric Association (KEA) is a consumer owned cooperative serving the remote, primarily Inupiat community of Kotzebue. Starting with three Atlantic Orient 66 kW turbines in 1997, and expanding to ten turbines in the past year, KEA currently meets five percent of the community's electricity needs. Each turbine generates between 120,000 and 150,000 kWh annually or enough electricity to meet the yearly demand from 20 homes. The ten turbines also reduce the utility's need for diesel fuel by about 90,000 gallons per year.

As the first utility grade turbines to be built north of the Arctic Circle, the KEA wind project has received financial and technical support from technology research labs, and from state, federal, and private agencies. The results of this Arctic experiment have been very positive, and KEA is currently reaching out to share its experience with installing and maintaining turbines in other extreme cold environments. The low temperatures provide one benefit: with air density much higher at Arctic temperatures, power increases by 25 percent.

Brad Reeve, project manager, says, "The project goal is to help make wind power commercially viable for remote communities with high power costs and sufficient wind resources, and to create quality jobs for rural Alaskans." Working toward this goal, KEA is working with the community of Wales, Alaska to install two turbines that will feed the local school and the washeteria (laundry and shower facility for the community). It is also forming a Northern Technical Training Institute to provide job training in installing and maintaining wind/diesel power systems in far northern environments.

To contact KEA and see a slide show of turbine installation on the frozen tundra, visit the KEA web site http://www.kotzelectric.com/wind/wind_home.html or call Brad Reeve at 907-442-3491.

Wind Energy

The cost of producing wind power has dropped from about 30¢/kWh in 1980 to 5¢/kWh today, making it both an economical and a renewable source of power. This power can be used locally or sold and transmitted to distant utility consumers. If your tribe is blessed with windy skies, it's time to consider putting turbines on your lands.

Advances in blade and turbine design over the past two decades have increased the efficiency and reliability of wind turbines, yet the basic idea remains the same. The kinetic energy of wind moves the turbine blades, which are connected to a driveshaft. The spinning driveshaft turns a generator. This alternating current (AC) electricity runs through conduit to a control center where the electricity is either fed into the grid or converted to direct current (DC) and stored in a battery. Many turbines spin at variable speeds, and the "wild" or variable frequency current they make is processed to 60 Hz AC for the grid. Some turbines, use an induction generator and make AC at the same frequency as the grid.

The swifter the wind, the more power you get from your wind machine. Because power is proportional to the cube of the windspeed, even a small increase in average wind speed can make a large difference in output. (A turbine operating at 20 mph would generate, in theory, eight times the power of a turbine operating at 10 mph. At 12 mph, a turbine generates 44 percent more power than at 10 mph!) Power output is also related to the swept area of a turbine. When the rotor diameter is doubled, the output of the turbine is quadrupled.

Unlike a pinwheel, which will turn in the slightest breeze, wind turbines are designed to start turning, or "cut in," when the wind reaches a minimum speed, somewhere between 4 and 10 mph, depending on the model. They are also designed to protect themselves from high winds so that the generator doesn't burn out. They do this by changing rotor angle or blade pitch.

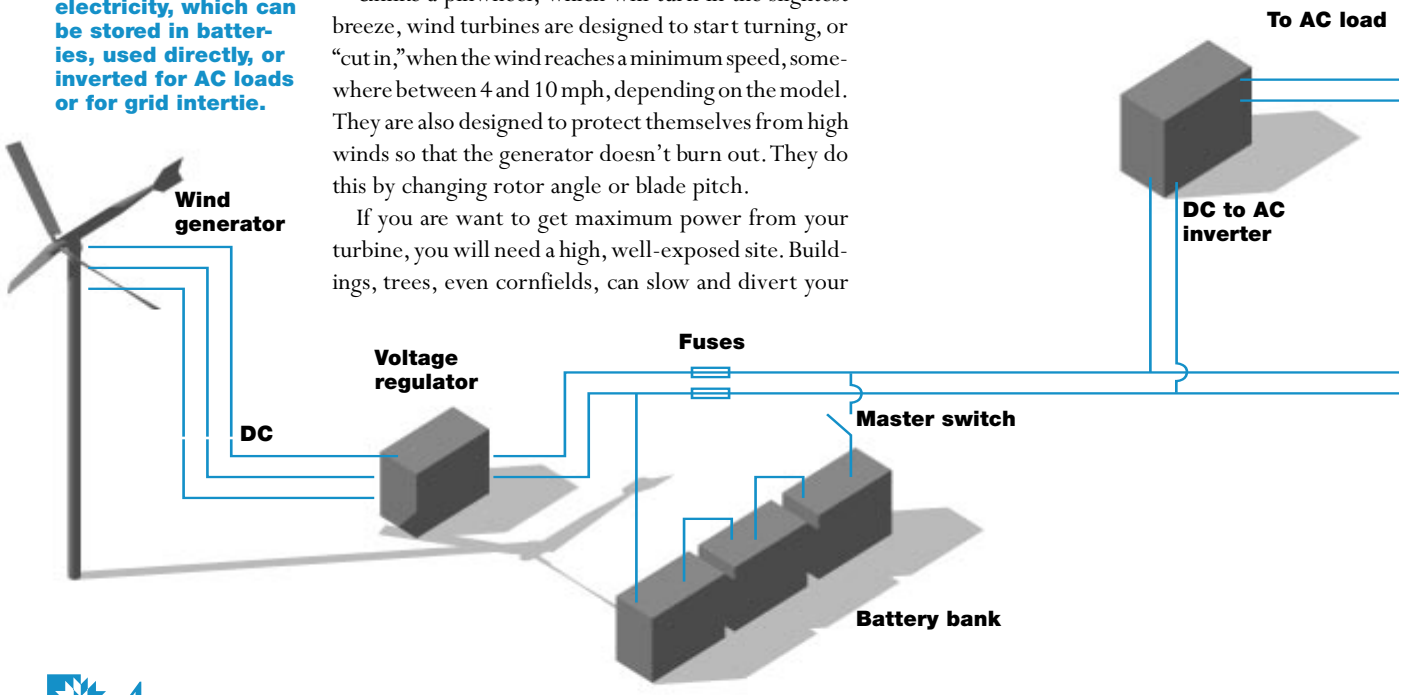
If you are want to get maximum power from your turbine, you will need a high, well-exposed site. Buildings, trees, even cornfields, can slow and divert your power source. As a general rule, the bottom of a turbine blade should be located at least 30 feet higher than any obstruction within 500 feet.

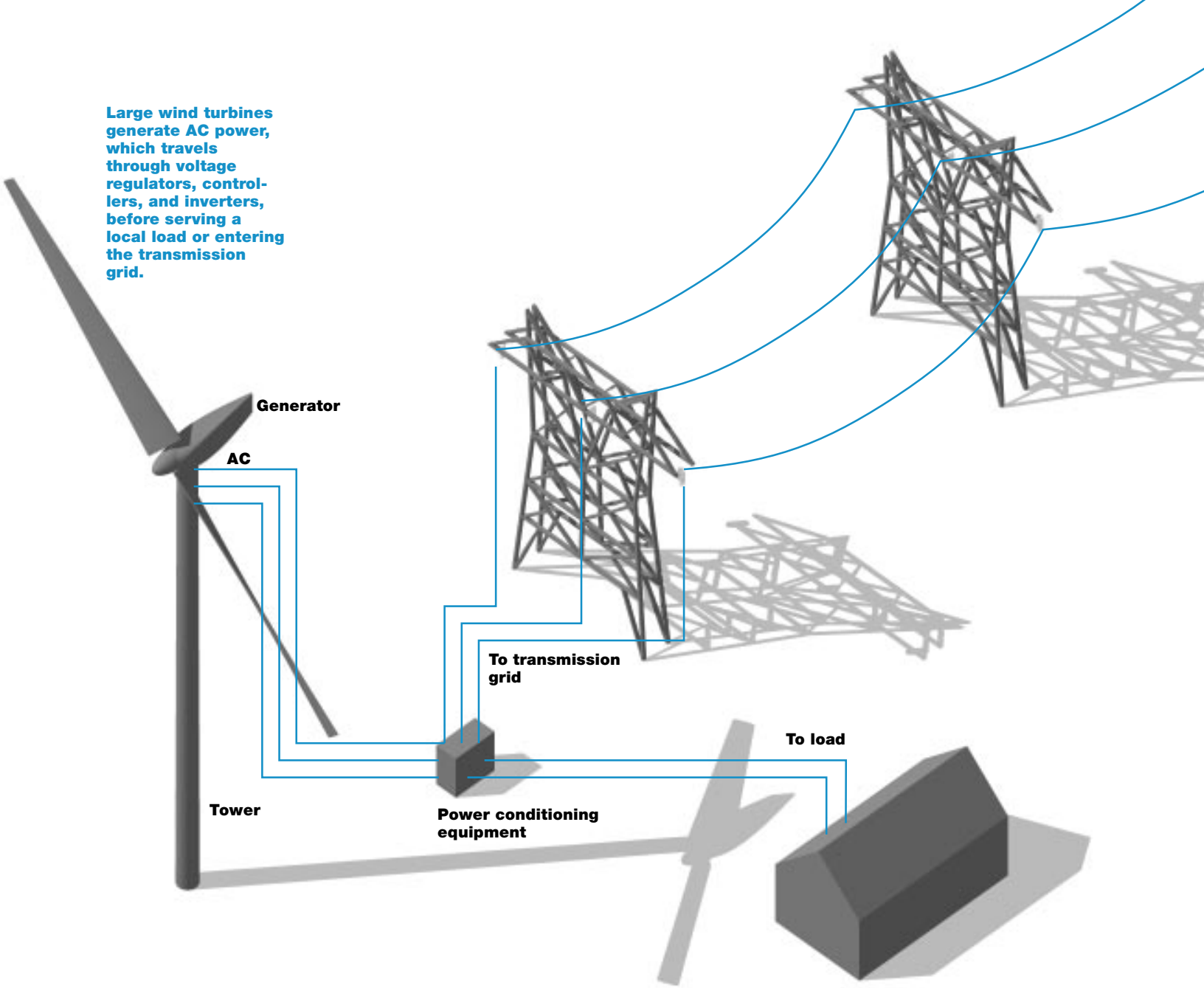
The current generation of wind turbines has been very reliable, usually spinning away for years with only annual bolt tightening and bearing grease jobs. Commercial wind farms employ technicians who perform regular maintenance, conduct tests on the turbines and their controls, and make repairs. In the case of smaller scale systems, this job gets added onto the duties of some height-loving, mechanically savvy staffer who gains the title of windsmith after going through a training on system maintenance.

Farming the Wind

Commercial scale turbines range from about 50 kilowatts (kW) to more than 1.5 megawatts (MW) of rated power. Wind farms are arrays of these large wind turbines, often covering an area of many acres. Like producing oil and gas fields, most wind farmland remains available for farming, ranching, and other uses. To develop a wind farm, your tribe will need adequate wind power, at least 11 to 13 mph at the site, preferably more. A one to two-year anemometer study, coupled with local weather information, will help your

Small wind turbines (less than 50 kW) usually generate DC electricity, which can be stored in batteries, used directly, or inverted for AC loads or for grid intertie.





Large wind turbines generate AC power, which travels through voltage regulators, controllers, and inverters, before serving a local load or entering the transmission grid.

tribe evaluate potential turbine sites and estimate power potential.

It costs approximately $1 million per megawatt of installed capacity to build a wind farm. To take advantage of economies of scale, windfarms generally must have a capacity of over 20 MW. Most new windfarms tend to be larger, from 50 to 200 MW in size, further improving economies of scale. For comparison, a typical coal-fired or nuclear power plant has a capacity of approximately 1,000 MW.

A critical issue is power transmission. High voltage distribution and transmission lines can cost tens or hundreds of thousands of dollars per mile, and transformers add additional costs. If your site is far from transmission lines, you will have to make up for the added transmission cost in greater wind speeds or some other economic advantage. Even if a tribe sites a turbine near transmission lines, the regional transmission organization (RTO) may have limited capacity for new electricity sources, and, hence, would not be able to immediately carry all of the electricity you expect to produce.

Another major issue is finding a buyer. While the cost of wind electricity is comparable to the costs of other electricity sources in the nation, it may be higher than the cost of electricity in your state or region. If you find a consumer utility several states away, you will also need to find transmission utilities willing to provide carrying capacity to your customer. These sales have been made easier through the advent of green power companies. Some states, local governments, and corporations have developed renewable energy portfolio standards; these standards require a certain percentage of their energy supply to be derived from renewable sources. Tribes may further market their electricity as Native American green energy, thereby

RESOURCES

ORGANIZATIONS AND GOVERNMENT AGENCIES

American Wind Energy Association (AWEA) is a national trade association. It provides up-to-date information on wind energy projects operating worldwide, companies working in the wind energy field, and wind technology and policy developments. (202) 383-2500. www.awea.org.

National Renewable Energy Lab. NREL performs technical research for the DOE. Their site provides wind maps and other technical information to the wind industry. www.nrel.gov/wind.

BOOKS AND JOURNALS

All of the books by Paul Gipe are excellent resources. These include:

Wind Energy Basics, Real Goods, 1999, A guide to small and micro wind systems, including utility intertie. (1-800-919-2400 to order)

Wind Energy Comes of Age. John Wiley & Sons, 1995. A thorough assessment of wind power technology, economics, and politics.

Landowner's Guide to Wind Energy in the Upper Midwest by Nancy Lange and William Grant, Isaak Walton League of America. Economic and legal issues for wind landowners; also principles of wind measurement, technology, and siting; to order call, 952-944-1423.

Home Power Magazine. "Hands-on" magazine for people building home power systems, including wind systems; P.O. Box 520, Ashland, OR 97520; 800-707-6585. Back issues available on the web at www.homepower.org. For small wind power, see Issue #65.

Wind Power Monthly: International professional wind energy journal. Vrinners Hoved, Knebel, Denmark, DK-8420 at www.wpm.co.nz/.

Wind Energy Weekly, American Wind Energy Association's commercial wind industry newsletter. AWEA, 1222 C Street, NW 4th Floor, Washington, DC 20001.

Renewable Energy World. New magazine with a mix of large and small-scale renewables, including frequent articles on large-scale wind power. James & James Science Publishers, 35-37 William Road, London NW1 3ER, UK, www.jxj.com/magsandj/rew/index.html.

WEB SITES

http://www.awea.org.

The American Wind Energy Association's comprehensive site for wind energy.

http://www.eren.doe.gov/windpoweringamerica/

This site is slated to include a page about Native American wind energy in 2001.

http://www.igc.org/energy/wind.html

Extensive links to manufacturers, organizations, universities, and other users and advocates of wind power

http://www.greenpeace.org/~climate/renewables/index.html#wind

Look for *Wind Force:* A report on how 10 percent of the world's electricity can be produced by wind within two decades.

potentially gaining a marketing advantage over other green power producers.

Putting together a commercial wind farm, like any major tribal economic development project, is a job with many tasks. If you are the project's champion, you may sometimes feel like the conductor of a three-ring circus. In one ring are the sales and transmission negotiations; in another ring are financing negotiations, and in another ring are the technical studies and pilot programs. All are moving along simultaneously, and each influences the others.

Financing a wind farm can involve: (1) getting consent from the tribal council for siting the project and for taking on a major loan; (2) negotiating a joint partnership agreement with an energy development company or capital investment firm; and (3) signing on another producing utility to back up the intermittent supply of wind with a steady source, such as hydro or natural gas. There are also deals to be worked out with wind energy consultants, turbine manufacturers, and construction firms. Finally, there are agreements to make with tribal departments or with an outside firm to provide ongoing operation and maintenance of the farm.

FROM KILOWATTS TO KILOWATT-HOURS

When we talk about a 10 kW or a 1.5 MW turbine, we are talking about its "rated output." The rated output is the power generated when the turbine is spinning at the manufacturer's "rated wind speed" for that turbine (25 to 30 mph for most turbines). Because average wind speeds are generally below rated wind speeds, the actual energy produced per month is less than the rated power times the hours per month.

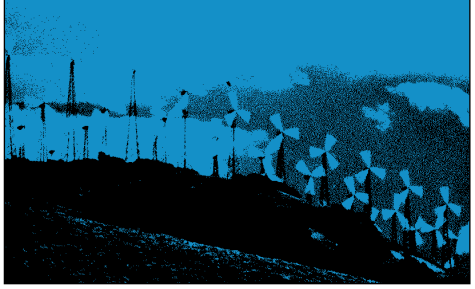
For Example:
Monthly electricity generated from a 10 kW Bergey wind turbine

At 27 mph (rated speed)
7,200 kWh/month
(10 kW x 720 hours/month)

At 12 mph —1,425 kWh/month

An "average U.S. home" uses 700 kWh/month.

So, this 10 kW turbine, spinning at an average annual speed of 12 mph would supply the needs of two average homes.



Wind for Local Use

Many tribes are installing turbines for local use. These turbines may be "grid-intertied," or "off-the-grid." A grid-intertied wind turbine may tie into utility lines feeding tribal buildings or facilities. The wind-generator reduces the amount of power drawn from the utility, thereby cutting electricity bills. An off-the-grid wind system can power tribal homes or facilities that are not hooked up to utility lines. These systems employ a battery bank to store energy so that the lights don't go out when the wind stops blowing. Often hybrid systems are installed; a combination of a wind turbine and photovoltaic solar panels allow for a more steady charging of batteries (e.g. Manzanita system). In addition, diesel generators are often used to back up these systems (e.g. Kotzebue system).

The size of these "non-commercial" wind turbines can range from a few hundred watts for a remote cabin, to perhaps 750 kW for a large grid-connected turbine, which may provide for the needs of a tribal casino, offices, clinic, school, or water pumping facilities. The range of costs and methods of financing vary as widely as the size of turbines. Small turbines may be financed through a personal or business loan. Pilot projects tied to tribal operations (schools, clinics, and water treatment plants) may be partially funded by grants, agency funds, and consumer payments.

The economics of off-the-grid sites are very different from grid-intertied systems. For remote sites, the power must be less expensive than the alternative, which would be the cost of buying and transporting diesel fuel or running a utility line at the cost of approximately ten to thirty dollars per linear foot. For grid-intertied systems, the average costs over the turbine's lifetime must be comparable to or less than the utility cost. For either type of application, it is important to invest some time in wind power analysis.

A number of tribes have used non-commercial wind turbines as a stepping stone to wind farm development. These "starter" turbines give the community an opportunity to buy into the wind power concept, while providing the tribe experience in installing and maintaining wind power systems. These pilot projects, also, give confidence to investors and utilities, easing project funding and purchase agreement negotiations when the tribe moves into commercial development.

To find organizations and resources that can help you explore windpower potential on your tribal lands, see the Resources section, or contact tribal wind professionals listed in Tribal Perspectives.

Steve Sargent

Dr. Stephen L. Sargent is Renewable Energy Program Manager at the US Department of Energy (DOE) Denver Regional Office. He has been responsible for managing DOE Indian Renewable Energy projects since 1995.

Steve, could you give us a brief history of the DOE Indian Energy Program?

The genesis was the Energy Policy Act of 1992, which included Title 26: Indian Energy Resources. This legislation supported vertical integration of energy resource development and the adoption of energy efficiency and renewable energy projects on tribal lands. Title 26 was intended to be a collaborative effort between the Departments of Interior and Energy. However, the Interior Department did not initiate action. So, in 1994, two people from DOE, Richard David from the Denver office, and Sandy Monje from DOE headquarters, were successful in obtaining $5 million to implement Title 26 in fiscal year 1994. In 1995, an additional $6.5 million was awarded, with $5 million going directly to the Navajo tribe for their electricity transmission project, and $1.5 million left to be distributed to other tribes. Thirty tribes and Alaska Native villages were awarded grants in these two years, with projects ranging from a feasibility study of a cogeneration plant at a tribal timber company, to purchase of a hydropower turbine, to commercial wind power resource assessments.

Windpower is a strong potential energy resource for a number of tribes, particularly in the Great Plains and upper Midwest. Can you tell us about tribal efforts to develop these resources?

There are quite significant possibilities for tribes to develop their wind resources. The ultimate aim for the tribes we have worked with is to develop wind farms, either themselves, or with commercial developers. Of the Title 26 grantees, the Blackfeet and the Fort Peck Tribes, both in Montana, are currently negotiating wind farm project agreements and contracts.

What are some of the lessons gleaned from this first round of Indian wind energy projects?

In the Great Plains, the wind resource is strong, yet a lot has to happen between the initial resource assessment and the installation of a wind farm. There is the transmission issue—where the wind is, the load isn't. There isn't adequate transmission capacity to carry the thousands of megawatts that the Great Plains tribes can produce. Currently the Western Area Power Authority (WAPA) is able to wheel 50 MW from the Fort Peck region to the Denver area, and the wind producing tribes are also talking to utilities on the West Coast. This is a beginning, but it will take financing of towers and transmission lines, as well as turbines to get the wind power from the Plains to the urban consumers.

After transmission, the next major issue is financing. In order for a tribe to get financing to build a wind farm, they need a signed agreement from a customer utility saying they will buy a specified quantity of power at a set price for a given number of years. The utility needs assurance that the wind producers can actually supply regular power by the agreed upon time. It is something of a chicken and egg game. Someone has to stick his or her neck out.

What about smaller projects, where the tribe is supplying power for its own needs rather than wheeling into the utility grid?

A number of tribes are pursuing this path. For some it is a step along the way toward a wind farm; for others it is an end in itself. The Manzanita Tribe in southern California is developing a PV/Wind hybrid system that will provide power to tribal offices and a community activity center, while the Rosebud Tribe is working on a 750 kilowatt project to provide some of the power to their casino.

What picture do you see for tribal wind power 20 years in the future?

I would be willing to bet money that 20 years from now there will be wind farms owned by tribes, with the power used by tribal communities and sold outside to consumer utilities. I think the Western Regional Air Partnership goals (10 percent of electricity generated from renewables by 2005, 20 percent by 2015) will help encourage the development of renewable resources.

What current and near-term opportunities are available for federal funding of wind power feasibility and pilot projects?

The DOE is currently funding renewable energy feasibility studies based at Tribal Colleges. (See News Briefs, page 8). The awards will be made for these projects within this fall, with potential for continued funding in the coming year. What happens on election day will affect the budget for DOE renewable energy and Indian Energy projects for 2002-2005.

Steve, do you have any words of advice to tribes considering renewable energy resource development?

In the renewable energy community, we have an old joke that "renewable energy has a great future and it always will." But things are changing. Energy is back on the national radar screen. Gasoline and natural gas prices have increased, as have electricity costs in deregulated markets. Air quality is a serious consideration. All these factors bode well for clean renewable energy. I hope that tribes will continue their renewable energy development. They could be leaders in the transition to a clean and renewable energy economy.

INDIAN SUSTAINABLE ENERGY NEWS

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THE NATIVE AMERICAN RENEWABLE ENERGY EDUCATION PROJECT IS A RESEARCH, EDUCATION, AND TECHNICAL ASSISTANCE PROGRAM THAT SUPPORTS AMERICAN INDIAN COMMUNITIES IN PURSUING SUSTAINABLE ENERGY STRATEGIES. NAREEP IS A JOINT PROJECT OF THE ENERGY AND RESOURCES GROUP AT THE UNIVERSITY OF CALIFORNIA AT BERKELEY AND LAWRENCE BERKELEY NATIONAL LABORATORY.

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Please call NAREEP if you are interested in doing an energy efficiency or renewable energy project.

PUB-818 REV.
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This work was supported by the U.S. Department of Energy under Contract No. DE-AC03-76SF00098, Lawrence Berkeley National Laboratory, University of California.

NEWS BRIEFS

Seven Native American Tribal Colleges and Universities will receive $700,000 from the U.S. DOE to study the feasibility of installing renewable energy technologies and integrating this work into educational curriculums. These colleges are: D-Q University in California, Southwestern Indian Polytechnic Institute in New Mexico, Stone Child College in Montana, Lac Courte Oreilles Ojibwa Community College in Wisconsin, Sitting Bull College in North Dakota, Northwestern Indian College in Washington, and Turtle Mountain Community College in North Dakota.

The Eight Northern Indian Pueblo Council (ENIPC) is incorporating energy efficiency and renewable energy into the planning of its permanent facility. This summer ENIPC, with the assistance of Rebuild America, held a two-day design workshop. Facility planners heard from specialists in sustainable energy design, indoor air quality, and waste management, as well as New Mexico building codes and economic assistance. ENIPC is making the most of this facility construction process by using it as a "test case" for identifying which building codes they would like to use or modify as they develop their own permanent building codes. For more information, contact Margo Covington at 505-982-0044, mcov@hotmail.com or Tom Talache at 505-852-4265 ext. 23, tomenipc@aol.com.

The Oneida Tribe of Wisconsin is installing solar hot water systems on tribal homes and a girls group home. They are also installing a two-kilowatt photovoltaic system on a community facility. Additional PV systems are being installed on tribal members' homes and on tribal signs. These new installations are part of an ongoing energy efficiency and renewable energy program on the Oneida Reservation. For more information, contact Laura Montag or Gene Shubert in Oneida Environmental Resources, or Bruno Zagar at Oneida Environmental Quality, all at 800-261-2163.

The DOE National Renewable Energy Lab (NREL), working with the Council on Utility Policy (COUP), has just completed a wind resource and development assessment for reservations in North and South Dakota. Preliminary results indicate highly favorable potential for development of both small-scale projects and large utility-scale wind farms. For more information, contact Pat Spears, President of Council on Utility Policy (COUP) at 605-945-1908, pnspears2@aol.com, or Bob Gough, COUP Secretary at 605-747-4097, rpwgough@aol.com.

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